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**A tool for rotationally secured fasteners**

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**(56) Documents cited**  
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**(73) Proprietor  
Arthur Kenneth Cragg,  
56 Church Street  
Southwell  
Nottinghamshire**

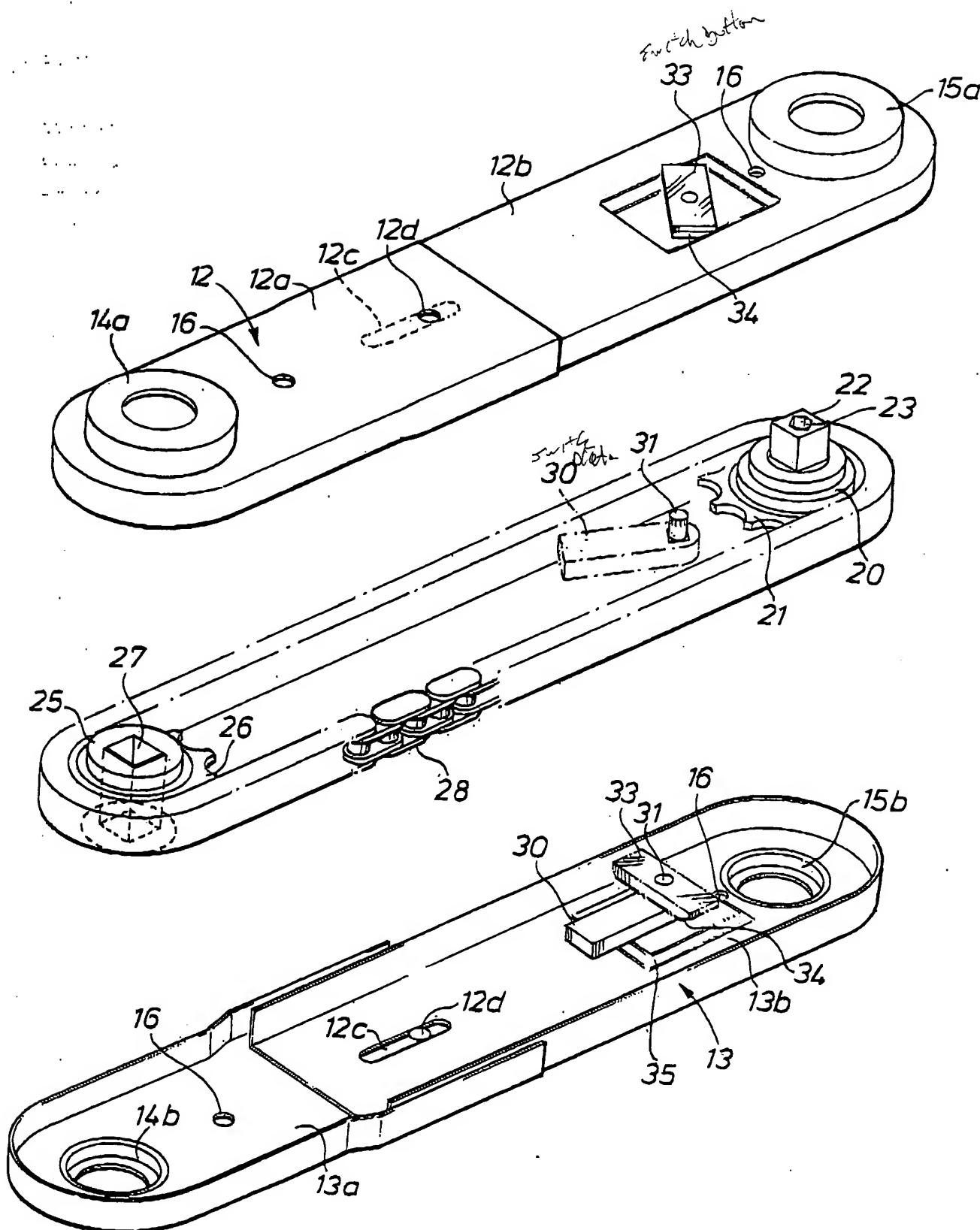
**(72) Inventor  
Arthur Kenneth Cragg**

**(74) Agent and/or  
Address for Service  
Eric Potter & Clarkson,  
14 Oxford Street  
Nottingham NG1 5BP**

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A TOOL FOR ROTATIONALLY SECURED FASTENERS

This invention relates to a tool for rotationally secured fasteners, such as screw fasteners.

It is often necessary to secure or release such fasteners in positions which render rotation of a tool engaged with the fastener difficult. This may be due to poor visibility, problems of access for a hand or arm, or due to obstructions limiting rotational movement of the tool to a small arc.

The present invention provides a tool which reduces this problem.

10 In accordance with this invention, there is provided a tool comprising an elongate hollow body, engagement means rotatably mounted adjacent one end of the body for engagement with a rotational fastener or a fastener-engageable accessory, drive means rotatably mounted adjacent the other end of the body about an axis parallel to the rotational axis of the engagement means, and a continuous band between and in positive engagement with the drive means and the engagement means, so that rotation of the drive means effects rotation of the engagement means, the continuous band being housing in the body, a pawl and ratchet arrangement in association with the engagement means and positionable to prevent rotation of the engagement means in either selected direction, the body defining a manually grippable handle to permit alternative use of the tool as a ratchet lever.

25 Reference is now made to the accompanying drawings, wherein the sole Figure is an exploded perspective view of a tool according to the invention.

The tool may be used as a ratchet lever and the appropriate parts for this purpose are described first.

30 The tool comprises an elongate hollow body of shallow depth comprising upper and lower body shells 12, 13. Each shell is adjustable in length and comprises two slidably interengaged parts 12a, 12b and 13a, 13b, one part of each shell having a longitudinal slot 12c, which aligns with an aperture 12d, in the other part of the shell. By this

arrangement fastening means engaged in the apertures 12d, can secure the parts of each shell in different relatively adjusted positions.

Each shell is formed adjacent each end with a circular-section dished part, defining a bearing 14a, 15a and 14b, 15b. The two shells can be secured together, by fasteners engaged in apertures 16, so that each bearing 14a, 15a of one shell is axially aligned with a corresponding bearing 14b, 15b of the other shell.

One set of bearings 15a, 15b, rotatably mounts a spigot 20, which circumferentially carries a sprocket 21. A axially projecting formation 22 is also carried by the spigot 20 and has the external form to mount a socket spanner head, e.g. the square-section shown. The formation also has a socket 23 for receiving a bit as an alternative to the spanner head. The formation projects through a hole in one of the bearings 15a. The spigot 20 can be locked against rotation, in a manner to be described and this allows the body 12, 13 to be used as a lever for use in turning a socket spanner head.

The other set of bearings 14a, 14b rotatably mounts a second spigot 25, which circumferentially carries a second sprocket 26. The spigot has a non-circular section axial aperture 27 therethrough for receiving a drive handle (not shown). The aperture 27 is accessible by the handle through holes in both of the bearings 14a, 14b.

A transmission means in the form of a continuous chain 28 engages with the two sprockets 21, 26, so that rotation of the second spigot 27 causes rotation of the first spigot 20 and hence of a bit or spanner head carried by the formation 23. This permits operation from a remote location, so that obstacles to use of conventional tools can be avoided.

A pawl 30 is rotatably mounted by means of a pin 31, which secures the shells together. The pawl can engage with either of two opposite runs of the chain 28 in a ratchet-like manner. When engaged with one run, rotation is prevented in one direction and vice versa; e.g. as illustrated, the chain 28 is prevented from movement in a clockwise direction, but

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can move in an anticlockwise direction. The pawl can be held in either selected engagement position and also in a neutral position. A resilient selector member 33 is mounted on the pin 31 externally of the casing. The member 5 has ramp surfaces 34 which can engage with walls of an indentation 35. The resilience of the member permits jamming of the ramp surfaces 34 against the walls of the depression to hold the pawl in either operative position.

The pawl may, alternatively, engage with the sprocket 21 instead of the chain 28 and spring-biasing means may be used for the pawl.

The body length is adjustable, as described above, to permit adjustment of the tension on the chain.

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CLAIMS

1. A tool comprising an elongate hollow body, engagement means rotatably mounted adjacent one end of the body for engagement with a rotational fastener or a fastener-engageable accessory, drive means rotatably mounted adjacent the other end of the body about an axis parallel to the rotational axis of the engagement means, and a continuous band between and in positive engagement with the drive means and the engagement means, so that rotation of the drive means effects driven rotation of the engagement means, the continuous band being housed in the body, a pawl and ratchet arrangement in association with the engagement means and positionable to prevent rotation of the engagement means in either selected direction, the body defining a manually grippable handle to permit alternative use of the tool as a ratchet lever.
2. A tool according to Claim 1, wherein the engagement means and the drive means are adjustable relative to each other longitudinally of the body for adjusting the tension of the continuous band.
3. A tool according to Claim 2, wherein the body has longitudinally slidably adjustable parts to effect said relative adjustment.
4. A tool according to any preceding claim, wherein the engagement means and the drive means carry sprockets and the continuous band is a chain engaged with the sprockets.
5. A tool according to Claim 4, wherein the pawl engages with the chain.
6. A tool according to Claim 5, wherein the pawl is mounted between two opposite runs of the chain between the sprockets, and resilient means is provided biasing the pawl into engagement with either selected runs of the chain.
7. A tool constructed substantially as herein described with reference to the accompanying drawings.